

THE  
AMERICAN JOURNAL  
OF THE MEDICAL SCIENCES  
FOR JULY 1863.

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ART. I.—*A contribution toward the Natural History of Articular Rheumatism; consisting of a report of thirteen cases treated solely with palliative measures.* By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine in the Bellevue Hospital Medical College, and in the Long Island College Hospital.

THE natural history of a disease comprises everything relating to that disease when its course is not interrupted nor altered by any extrinsic agencies. Under favourable hygienic circumstances, what are the symptomatic events which a particular disease manifests? Of these events, which are constant, which are present more or less frequently, and, as regards the latter, what is the relative frequency of the occurrence of each? What are the laws of the development of the disease, of its progress and of the phenomena which belong to it? What is its intrinsic tendency with respect to its ending in death or recovery? What is its average duration in fatal and non-fatal cases? What appreciable changes in the solids or fluids of the body are peculiar to it? What are its sequels? The answers to these questions embrace the facts which make up the natural history of the disease. The facts are to be obtained by observing cases in which there have been no disturbing influences including therapeutical interference. Cases treated by means of measures designed to arrest, abridge, diminish the intensity of the disease or change its character, cannot supply the data for determining accurately its natural history. The facts furnished by the observation of such cases, consist, in part, of the phenomena of the disease, and partly of the effects of treatment; and, if the natural history of the disease be not already known, it is impossible to discriminate between the former and the latter. The clinical history of a disease, if based on the observation of cases in which therapeutical agencies of more or less potency have been employed,

is by no means the natural history of that disease; the therapeutical agencies employed, in proportion to their number and potency, have affected its phenomena, laws, etc., or given rise to events which have nothing to do with the disease.

These assertions are simple truisms, and when it is added that, simple as they are, they have not been heretofore, and are not even now, sufficiently appreciated by the medical profession, it is to be considered that, in the first place, the importance of knowing the natural history of diseases has not been, and is not always duly estimated, and, in the second place, that there are difficulties in the way of obtaining the facts on which the natural history of diseases is to be based. The importance of this knowledge is very great; for, if we are unacquainted with the natural history of any particular disease, we cannot tell in individual cases, whether the course of the disease be regular or eccentric; we are liable to doubt and error in the diagnosis and prognosis; in short, we are not prepared to judge of the present condition of the patient nor to anticipate coming events. Still more, the importance of this knowledge is shown in its bearing on the acquirement of information respecting therapeutics. The evidence of the curative efficacy of remedies is obtained by a comparison of cases in which they have been employed, with cases in which the disease has been let alone. Hence, medical experience, so far as regards the treatment of a disease, can never be complete or reliable without knowing its natural history. But the difficulties of obtaining this knowledge are great. We cannot observe cases of disease without employing therapeutical measures which we have reason to believe may contribute to the safety, welfare or even comfort of the patient. The clinical observer would be justly censured were he to withhold treatment which, in his opinion, would be useful, even for so desirable an end as obtaining data for the natural history of a disease. Hence, before he can deliberately allow diseases to pursue their course, he must be persuaded that he may do so without exposing his patients to suffering or danger, which the resources of his art would enable him to diminish or arrest. The magnitude of this difficulty is obvious, yet, within the last few years, much progress has been made in acquiring knowledge of the natural history of diseases; and I believe it is but just to say that this progress has been made under a due sense of the moral responsibility of the physician to the patient. It may be safely said that the knowledge in this direction already acquired has in no small degree exerted a salutary influence on the practice of medicine.

The purpose of this paper is to make a small contribution to our knowledge of the natural history of Articular Rheumatism. I shall submit the facts derived from the observation of a limited number (13) of cases in which this disease pursued its course, no therapeutical measures being employed with a view to any curative influence. The few measures resorted to had reference solely to the alleviation of pain. It is proper to state the

circumstances which led me to the conclusion that I could enter upon such a plan of clinical observation without impropriety.

Various methods of treating articular rheumatism have been in vogue, within the period of my own professional experience. Bleeding, local and general, together with other of the so-called antiphlogistic measures, mercury carried to ptyalism, colchicum given in doses to produce free purging and vomiting, the nitrate of potash an ounce or more daily, opium in full doses, the sulphate of quinia given largely, have been successively in vogue during the last twenty-five years; the treatment which of late years and at the present moment is generally adopted, being the administration of the salts of potassa or soda in sufficient quantity to render the union alkaline. The later method is generally known as the alkaline treatment. In 1854 I was led to analyze the cases of articular rheumatism of which I had kept records. I had notes at that time of twenty-four cases only. These were analyzed with reference to the ages of the patients, the seasons when the cases occurred, the previous health, mode of attack, the parts affected in combination and succession, the occurrence of heart complications, concomitant disorders of the nervous, pulmonary, digestive and urinary systems, the duration of the disease and the treatment.<sup>1</sup> As regards the treatment of these cases, in two, colchicum was given freely; in two, citric acid was the only remedy used; in several, nitrate of potash was prescribed more or less freely; in two, bleeding was practised; in eight, mercury entered into the treatment; in eleven, opium was used; in three, the sulphate quinine in full doses; in two, the iodide of potassium, and in one case lemon juice in large quantity was tried. The general conclusions drawn from the analysis of these cases with reference to the treatment, are contained in the concluding remarks as follows:—

“The results developed by the analysis of the few cases contained in this collection are of importance only as a small contribution toward the accumulation of facts by which, it is to be hoped, the merits, real and relative, of the several remedies that have been noticed may be determined. As the true point of departure for studying the effects of any, or all remedies, our science lacks here, as with reference to most other diseases, knowledge of the average duration, etc., of a series of cases in which the disease was allowed to pursue its course undisturbed by medicinal interference. This knowledge cannot be voluntarily and deliberately acquired. Facts bearing thereon can only be obtained slowly as chance supplies them. And, at the present moment, we cannot answer the question; what are the intrinsic tendencies of articular rheumatism as respects its continuance, its complications and remote consequences in the organism? Were we able to answer this question by an appeal to facts, we should then have a criterion by which to estimate the favourable or unfavourable influences of different methods of treatment pursued in a series of cases; as it is, in bringing statistical information to bear on the therapeutics of the disease, we can only study the immediate apparent effects of different remedies, and institute

<sup>1</sup> Vide Buffalo Medical Journ., No. for March, 1854, vol. ix. p. 557.

comparisons, in this point of view, and also with reference to the duration of the disease, etc., in different series of cases treated by different methods. So far as the observations go which have been presented in this paper, they lead to a distrust of the efficacy of the several remedies employed, rather than tend to increase confidence in our ability to control by means of them the progress of the disease. Some of the remedies appear to possess more or less palliative power. This is true of colchicum, bleeding, and opium; but as respects the duration of the disease, it was in some cases short and in other cases protracted under different remedies. This being so, it is perhaps more philosophical to attribute these differences to variations in the tendencies of the disease, in different cases, rather than to the agency of the remedies used. It is to be observed that under the use of several remedies supposed to possess more or less remedial efficacy in this disease, the complication most to be apprehended, viz: heart affection, became developed. This was true of colchicum, the nitrate of potass, calomel, and opium."

These remarks were published in 1854. Since that date the alkaline treatment has been very generally adopted. The reader need not be informed that the able writings of Dr. Henry Wm. Fuller have done much to establish this method. The statistics presented by Dr. Fuller, in his work on rheumatism, and in the clinical lectures at this moment in progress of publication in the *Medical News and Library*, certainly show a striking contrast between the results of the alkaline treatment and of the various methods formerly in vogue; but they do not show the results of the alkaline treatment as compared with the natural history of the disease. During the last eight years I have been accustomed to rely on alkaline remedies in the treatment of this disease; not, however, employing them in as large doses as Dr. Fuller recommends in his recently published lectures. The preparation which I have generally selected is the tartrate of potassa and soda, given until the urine is rendered alkaline. This is the article generally used in this city. At the Bellevue Hospital the standing remedy for rheumatism is a solution of the tartrate of potassa and soda with a small proportion of colchicum, known in the hospital as the anti-rheumatic mixture; and during my eight months' service in 1861-62 this mixture was employed in the cases of rheumatism admitted into my wards. I have not taken pains to keep records of the cases which I have observed during the last few years; but the impression which has been left upon my mind is, that, as regards the severity of the disease, its duration, and the liability to cardiac complications, the alkaline treatment, in my hands, has given results not materially different from those afforded by the methods of treatment previously in vogue. This is my impression; I will not say conviction, for I freely admit that I have not the data, derived from my own clinical experience, for forming a positive conclusion. Nor shall I argue in behalf of the probable correctness of this impression; my object in stating it being simply to show how I came to consider it appropriate to begin to observe cases of this disease in which no measures were employed with reference to a curative effect.

On entering on duty at Bellevue Hospital in August, 1862, I resolved to treat with palliative measures only the cases of articular rheumatism which should be received into my wards, so long as circumstances might lead me to conclude that, by continuing this plan, no injustice was done to the patients, whose relief was, of course, paramount to any other object. The cases thus treated progressed so satisfactorily that I found no ground for a discontinuance of the plan. The last case which came under my observation, in fact, was the only one in which any important complication occurred. Some of the cases were recorded by myself, and the remainder by my zealous clinical assistant, Dr. Shiverick. I shall proceed to submit a condensed report of all in which there had been no treatment of importance prior to admission into hospital, or before the cases came under my observation, as well as during the time they were under my charge. A few cases had been already under treatment, and I had not, therefore, the opportunity of carrying out my plan fully from the start. These cases are not included in the series now to be reported, and, in addition, one case in which the anti-rheumatic mixture of the hospital was given for several days in consequence of a misapprehension. The reported cases were treated throughout the whole course of the disease with only palliative measures. These measures, as will be seen, consisted of opium in some form, given in small or moderate doses, the application generally of dry flannel to the affected joints, and the use of either the soap and opium liniment, camphorated oil, or the tincture of aconite. But to secure the moral effect of a remedy given specially for the disease, the patients were placed on the use of a placebo which consisted, in nearly all of the cases, of the tincture of quassia, very largely diluted. This was given regularly, and became well known in my wards as the *placeboic remedy* for rheumatism. The favourable progress of the cases was such as to secure for the remedy generally the entire confidence of the patients. I may add that all the cases were brought before the medical class in attendance during the winter.

**CASE 1. Acute Rheumatism. Endocardial Murmur at the Base and Apex.**—Ann Malloy, aged 35, domestic, admitted Aug. 13, 1862. Had never before had rheumatism, and always enjoyed good health. On the 5th inst. the left wrist became painful, tender, and swollen; the next day the right wrist was similarly affected. Both wrists were still swelled, painful, hot, and tender. The left ankle and right elbow had also become affected; other joints not affected. Had kept the bed since the date of the attack. Moderate febrile movement. No treatment prior to admission.

In this case the *placeboic* remedy employed was a very weak solution of the sulphate of quinia, the patient not getting more than two grains in the twenty-four hours. A little opium was given at night. A lotion of lead and opium was applied to the affected joints, and the latter covered with oiled muslin.

When this case first came under observation, a soft systolic murmur existed at the apex, over the body, and at the base of the heart. The heart was not enlarged, and no pain or tenderness was referable to the præcordia.

*August 19.* The patient's condition remains about the same. No affection of other joints than those at first affected. Pulse 92.

*23d.* She reported, and was evidently better. No new joints had become affected; the affected joints less painful. Pulse 84. Some appetite.

The bowels were moved on the 21st with a saline laxative, there having been no dejection for several days. Dry flannel had been substituted for the lead and opium wash.

*26th.* No new joints affected; appetite fair, and she was allowed full diet. Pulse 75. She still kept the bed. Camphorated oil was applied to the affected joints.

*28th.* Convalescing and sitting up. Good appetite and no restriction of diet. The anodyne at night had been discontinued.

*September 4.* Had continued to improve. A soft, feeble murmur heard at the base and over the body of the heart, but not at the apex.

*8th.* The patient was discharged at her own request. No cardiac murmur was discoverable by Dr. Shiverick and myself.

*21st.* This patient called at the hospital, and reported that she continued free from rheumatism; she complained of weakness, and presented a pallid aspect.

*Remarks.*—The duration from the date of attack to convalescence was 23 days; the time in hospital was 26 days; the duration of convalescence was about 11 days. The joints affected were both wrists, one ankle, and one elbow. An endocardial murmur existed and disappeared during convalescence.

*CASE 2. Subacute Rheumatism. Endocardial Murmur at the Apex.*—Mary S. Watson, domestic, admitted August 20, 1862. The patient stated that her health had been good up to three weeks prior to her admission, when, after some exposure, she had pain in the back, not very severe, for which a sinapism was applied. She was next seized with pain in the left hip, and subsequently the left wrist and right knee had been affected. These joints were still affected, but in a moderate degree. She keeps the bed, not from necessity, but because she was more comfortable than when sitting up. She had had no medical treatment.

She was placed on the tincture of quassia largely diluted. Dry flannel to the affected joints.

*August 24.* Up and dressed. She complained of pain and soreness in the left ankle, right knee, and both shoulders. Pulse 72. Appetite good.

*26th.* Kept the bed, and complained of pain in the right knee, in both hips, and in both shoulders. The right knee was tender, and there was some effusion into the joint. Pulse 68. The appetite was tolerable, and she was allowed full diet. Bowels constipated.

A soft, feeble, systolic murmur was heard at the apex. The sounds of the heart were feeble, especially the first sound. The heart was not enlarged.

*28th.* Patient up and reported better. No new joints affected.

*September 2.* The patient left the hospital, reporting herself quite well. It is not noted whether or not the endocardial murmur existed at the time of her discharge from the hospital.

*Remarks.*—The duration from the date of the attack to convalescence was about twenty-eight days. The time in hospital was twelve days. The

duration of convalescence was five days. The joints affected were both hips, one wrist, one knee, and both shoulders.

**CASE 3. *Acute Rheumatism. Murmur in the Pulmonary Artery.***—Margaret Evans, age 26, domestic, admitted August 29, 1862. A week before her admission the phalango-metacarpal joint of the left thumb became swelled, reddened, and painful. She poulticed it for three days. At the end of three days the right knee became affected. No other joints were affected prior to her admission, but directly afterward the right elbow became affected, the joints previously affected remaining so. She had had no medical treatment, excepting that she had taken a dose of castor oil. She was suffering much from the affected joints. She perspired occasionally. Pulse 80.

A faint, systolic, bellows murmur was appreciable at the base of the heart over the pulmonary artery.

The *placeboic* remedy was prescribed with an anodyne at night, and, for the affected joints, dry flannel and the soap liniment.

*September 4.* The affected joints were still quite painful, but no other joints affected. Pulse 94. Bowels constipated. The pulmonic murmur was still heard, and no murmur elsewhere. She had some appetite, and full diet was allowed.

*6th.* Some improvement. Pulse 80. No other joints affected.

*9th.* Much improvement; the patient sitting up.

*15th.* Patient up and about the ward.

*October 6.* The patient had progressively improved, and was discharged well on this date.

**Remarks.**—The duration from the date of the attack to convalescence was about seventeen days. The whole time in hospital was thirty-seven days; time after convalescence twenty-seven days. The elbow, knee, and phalango-metacarpal joint of the thumb were the only joints affected. It is not noted whether or not the basic murmur existed at the time of her discharge.

**CASE 4. *Acute Rheumatism. Endocardial Murmur.***—Margaret Kelly, age 19, seamstress, admitted September 2, 1863. Two months before her admission she had intermittent (tertian) fever, which continued for a month. Had not recovered her former strength, when, on the 31st ult., she was attacked with pain and soreness in both knees, both ankles, and the right wrist. These joints only were affected on her admission. She had kept the bed since the 31st ult., and had had no medical treatment. The affected joints were painful, tender, swollen, and the ankle and knee-joints presented circumscribed erythema. The pulse was frequent, numbering on the day of admission 120. She perspired freely during the night. A faint, systolic murmur existed at the base of the heart.

The *placeboic* remedy was prescribed, and dry flannel to the affected joints.

*September 4.* The pain, etc., in the affected joints was diminished, and no other joints had become affected. Pulse 104. Perspiration continued. The murmur at the base of the heart continued, and was heard over the body of the heart, but not at the apex. At the base it was loudest over the pulmonary artery.

*8th.* Improvement continued, but the affected joints were still tender

and painful. No other joints affected. Pulse 100. Some appetite. A little morphia at night was prescribed. Prior to this date no anodyne had been given.

11th. Much better; the patient set up for a short time on the preceding day. Pulse 78. Perspiration had ceased.

13th. No tenderness in any of the affected joints, and the patient quite well.

24th. Patient left the hospital well. The endocardial murmur was faintly perceived.

*Remarks.*—The duration from the date of attack to the time of convalescence was about twelve days. Time in hospital twenty-two days. Both knees, both ankles, and one wrist only affected; and no joint affected after admission. Time in hospital after convalescence, fifteen days.

*CASE 5. Acute Rheumatism shortly before Admission. Relapse after Admission. The Affection Subacute.*—Anna Gross, aged 25, domestic, admitted August 25, 1862. This patient stated that two months previously she was attacked with rheumatism; that most of the joints were affected, and that she was confined to the bed for two weeks. She had had some remedies, but she was not able to state what they were. On her admission she was free from rheumatism, but complained of pain in the upper part of the chest, on the right side. On September 1st the left wrist-joint and right knee became swelled, tender, painful, and reddened. She complained also of pain and soreness in the right shoulder. Prior to the development of the rheumatism in hospital she was taking the sulphate of quinine. When the rheumatism occurred this was discontinued, and the *placeboic* remedy substituted; the affected joints were covered with flannel, and the soap and opium liniment applied to them.

September 4. The pain, etc., in the affected joints had diminished. No other joints had become affected. Pulse 84. No cardiac murmur. Some appetite.

8th. No other joints affected. The affected joints improving.

13th. The patient was up and about the ward. She was free from rheumatism, excepting that the dorsal surface of the left hand was swelled and painful.

16th. Patient left the hospital, some swelling and soreness of the dorsal surface of the left hand remaining, but otherwise quite well.

*Remarks.*—The duration from the relapsing attack in hospital to convalescence was thirteen days. Time in hospital twenty-two days. Time in hospital after convalescence three days. The joints affected were the left wrist and the right knee.

*CASE 6. Acute Rheumatism. Bellows Murmur at the Base of the Heart.*—Mary Hickey, aged 32, domestic, admitted August 27, 1862. She was attacked with pain, etc., on the day before her admission, in the right wrist; and, on the day of her admission, in the right knee-joint. These joints, when she was admitted, were tender, swollen, and presented an erythematous flush. No other joints were affected. The pulse was 116. No cardiac murmur was discoverable. She had never had rheumatism before, and she had had no medical treatment.

The *placeboic* remedy was prescribed, with flannel to the affected joints, and an anodyne at night.

August 30. The patient reported better. No new affection of joints. No cardiac murmur. She complained still considerably of the affected joints. Pulse 108. She had some appetite, and no restrictions were imposed as regards diet.

September 2. The patient still complained of the affected joints. No other joints affected. Pulse 96. Bowels constipated. Having learned that the patient was addicted to drinking gin, a little whiskey was allowed. The soap liniment was applied to the affected joints.

4th. The condition was about the same. No new affection of joints. Pulse 100. A feeble, systolic murmur was heard at the base of the heart; more marked over the pulmonary artery than over the aorta.

8th. Reported better. The affected joints were less painful, and no new joints affected.

11th. No material alteration.

15th. Much improved. Pulse 80.

20th. The improvement continued.

25th. The patient was up and about the ward.

October 7. The patient was quite well.

15th. She was discharged.

*Remarks.*—The duration from the date of the attack to convalescence was above twenty-six days. The time in hospital was forty-nine days. It is not noted whether or not the bellows murmur existed at the time of her discharge. Time in hospital after convalescence twenty-four days. The joints affected were the right wrist and the right knee.

CASE 7. *Acute Rheumatism. Aortic and Mitral Murmur.*—Catherine Shay, aged 25, domestic, admitted Oct. 15, 1862. About a month prior to her admission, the left-knee joint was painful, reddened, and swollen. At the same time the dorsal surface of the left hand was painful, reddened, and swollen. In about a week she had apparently recovered; but shortly the right knee-joint was attacked; she was obliged to take to the bed, and had remained in bed up to her admission, a period of two weeks. On her admission, the knee only was affected; she had taken some remedies before coming to the hospital, but did not know what they were. Pulse 106.

She had an aortic direct and a mitral systolic bellows murmur. The heart was not enlarged.

The *placeboic* remedy was prescribed, with an anodyne at night, and the affected joint was wrapped in dry flannel.

19th. The affected knee-joint remained about the same. The right ankle-joint became affected on this date. The tincture of aconite was applied to the affected joints with marked relief.

22d. The condition was about the same. A cathartic had been administered, the bowels having been constipated.

24th. Much improved. The knee-joint was now the only one affected, and the swelling, tenderness, and pain in this joint were much diminished. Pulse 96.

Nov. 4. Improvement had continued, and the patient was able to sit up; the cardiac murmur remained.

25th. Left the hospital, complaining of a little stiffness in the affected knee.

*Remarks.*—The duration from the date of attack to convalescence was about 30 days; time in hospital 40 days. In this case one joint only, the ankle, became affected after the admission into hospital, the knee-joint only having been affected prior to her admission. Time in hospital after convalescence, 31 days.

*CASE 8. Acute Rheumatism. Bellows Murmur at Base of Heart.*—Emma Stewart, age 20, domestic, admitted Oct. 15, 1862. The patient stated that about a month before her admission the right shoulder became painful and tender to the touch, and a week later the left shoulder became affected in the same way. A few days afterward, the right and left ankles became painful, tender, and swollen; and in a few days more the right elbow was affected. These joints remained affected. She had kept the bed part of the day for two weeks, and, within a few days, constantly. She had had no medical treatment. The day after her admission, the joints of two of the fingers of the right hand became affected.

A systolic bellows murmur existed at the base of the heart over the pulmonary artery. The heart was not enlarged.

17th. The left elbow became affected. The *placeboic* remedy was prescribed; the affected joints wrapped in flannel, the tincture of aconite applied, and an anodyne given at night.

20th. The patient was much better. The febrile movement, which previously existed, had subsided, the pulse now being 88. A laxative was prescribed, no dejection having occurred for several days.

26th. The sterno-clavicular articulation had become tender and painful. The affection of the joints, previously attacked, was much diminished.

29th. Improvement continued.

Nov. 4. The patient was sitting up. The affection of the joints had nearly disappeared.

21st. The patient was quite well. The date of her discharge is not noted.

*Remarks.*—The duration from the date of attack to convalescence was about 45 days. The duration from her admission to complete recovery was about 35 days. The duration after convalescence to complete recovery was 21 days. The finger joints of one hand, one elbow joint, and the sterno-clavicular articulation on one side became affected after admission; both shoulders, both ankles, and the right elbow having been affected prior to admission. It is not noted whether or not the bellows murmur at the base of the heart existed after recovery.

*CASE 9. Acute Rheumatism. Bellows Murmur at the Base of the Heart.*—Anna Irwin, aged 23, domestic, admitted October 23, 1862. She was attacked during the night of the 21st instant with pain, followed by swelling and tenderness, in the right knee-joint. No other joint had become affected. She had kept her bed since the attack. She had perspired freely, especially during the night. On her admission the knee-joint was considerably swollen, painful, and presented an erythematous flush. A bellows murmur existed at the base of the heart, over the acute and pulmonary artery. The pulse was 90.

The *placeboic* remedy was prescribed, with the tincture of aconite to the affected joint, which was enveloped in flannel.

October 26. No other joint affected. The knee was less painful, and the swelling diminished. Pulse 105. No dejection having occurred for several days, a dose of castor oil was prescribed.

29th. The patient much improved, and no other joint affected.

November 4. No other joint affected. The knee was still painful. The bellows murmur continued.

11th. The patient still kept the bed, but no other joint affected.

21st. The patient complained only of stiffness in the affected knee-joint.

December 12. Left the hospital quite well.

*Remarks.*—The duration from the date of attack to convalescence was about twenty-five days. Time in hospital was fifty days. Time in hospital after convalescence twenty-four days. No joint became affected after admission, and the knee-joint was alone affected during the continuance of the disease. It is not noted whether or not the bellows murmur existed at the time of her discharge.

CASE 10. *Acute Rheumatism. Bellows Murmur at the Base of the Heart.*—Roderick Knox, aged 42, admitted December 30, 1862. The patient stated that he had rheumatism for the first time fifteen years before, and he had had the disease repeatedly since. The present attack occurred five weeks before his admission. Different joints had been successively affected, as follows: The right and left knee, the left and right ankle, and the left elbow. After his admission the left wrist became affected. He had had no medical treatment prior to his admission.

This patient, through a mistake, got the anti-rheumatic mixture of the hospital for two or three days. The *placeboic* treatment was then substituted.

January 8. No improvement. The small joints of the hands and feet have become affected. He kept the bed. Pulse 96.

13th. The patient complained of much pain in the affected joints. The existence of a systolic bellows murmur is noted. The tincture of aconite and flannel were directed for the affected joints, and the sulphate of morphia *pro re nata*.

22d. The patient was much improved. He was now sitting up, but unable to walk on account of tenderness of the ankle joints.

25th. The improvement continued. He complained only of tenderness of the ankle joints.

29th. Improvement continued. The cardiac murmur still existed. The murmur was limited to the base of the heart, over the pulmonary artery.

February 1. On this date I left the division. Under date of Feb. 24 it is noted that the patient left the hospital shortly prior to that date, but had been readmitted in consequence of a return of the rheumatism.

*Remarks.*—The duration from the date of the attack to convalescence was about fifty-six days. Duration after admission to convalescence about twenty-two days. The small joints of the fingers and toes became affected after his admission; both knees, both ankles, one elbow, and one wrist having been affected prior to admission.

*CASE 11. Acute Rheumatism. The Patient affected with Pulmonary Tuberculosis Non-Progressive.*—A. Crawford, cartman, age 54, admitted January 14, 1863. The patient stated that he had had rheumatism in July, 1862, lasting about six weeks. A week prior to his admission the right knee-joint became painful, tender, and swollen. The affection of this joint continued on his admission, and no other joint had become affected. The pulse was 96. He had no medical treatment prior to his admission.

The *placeboic* remedy was prescribed.

*January 18.* The affection of the knee continued, and he complained much of pain in this joint. No other joint affected.

*22d.* He remained about the same.

*25th.* The affection of the right knee continued, and he complained of pain in the left knee; but the latter was not swollen nor reddened. He also complained of pain in the right shoulder.

*30th.* The knee first affected was nearly free from pain, etc. The left knee was moderately affected. He complained of pain in the right shoulder and left foot.

This patient had made no complaint of any pulmonary symptoms, and I was led to auscultate the chest in order to obtain a good example of the normal murmur for class illustration. To my surprise I found bronchial respiration at the left summit, with dulness on percussion. I then ascertained that cough had existed since the preceding August. His aspect denoted health, and he did not think his cough of sufficient consequence to call attention to it.

*February 1.* I left the division on this date. The patient could be considered as convalescing. I subsequently ascertained that he continued to convalesce, and shortly afterward left the hospital.

*Remarks.*—The left knee, right shoulder, and left foot became affected after his admission. The affection of these joints, however, was slight; one knee only was affected prior to his admission. The duration from the date of attack to convalescence was about twenty-four days. Duration from admission to convalescence was about seventeen days. The absence of cardiac murmur is not noted; but all cases were examined repeatedly with reference to this point, and had a murmur existed it would doubtless have been noted.

*CASE 12. Acute Rheumatism. Bellows Murmur in the Aorta and Pulmonary Artery.*—Ann Burke, age 35, domestic, admitted January 31, 1863. She had rheumatism a year before the present attack, and was confined to the bed for six weeks. She recovered fully and remained well until three days before her admission. The right ankle was first affected, then the left, and obliged her to take to the bed. These joints were swollen, tender and painful on her admission. Pulse 90. Had had no medical treatment.

The *placeboic* remedy was prescribed, with an anodyne at night and the tincture of aconite to the affected joints.

*February 6.* The patient reported much better. No other joints affected. A faint bellows murmur existed at the base; and I judged from the difference in pitch of the murmur on the right and left sides of the sternum, that there were in fact two murmurs, one in the aorta and the other in the pulmonary artery. No murmur over the body of the heart or at the apex.

12/h. No other joints had become affected, and the affection of the ankle-joints had so far disappeared that the patient was able to walk about without inconvenience.

14/h. The patient was discharged quite well.

*Remarks.*—The duration from the date of the attack to convalescence was about twelve days. Time in hospital, fourteen days. No joints became affected after admission; both ankles being the only joints affected prior to admission. It is not noted whether or not the bellows murmur at the base of the heart existed at the time of her discharge.

CASE 13. *Acute Rheumatism, Endocarditis, Pericarditis, and Pneumonia developed. The latter affections treated with alcoholic stimulants, carbonate of ammonia and the chlorate of potassa in large doses. Recovery.*—Delia McNeil, age 20, domestic, admitted March 5, 1863. The patient stated that her health had been good excepting within the last two years. She had had during this period intermitting fever repeatedly. She was attacked four weeks before her admission with pain and tenderness in the left knee-joint and afterward in the right knee, the left ankle, the right ankle, in both shoulders, both wrists, and the left hip-joint. These joints were all more or less affected on her admission—the knees, ankles, and wrist-joints being swollen and reddened. She had kept the bed for thirteen days. During this time she had anorexia, thirst, frequent perspirations and the pain prevented her from obtaining much sleep. For three or four days prior to her admission she had had pain in the præcordia, for which a sinapism had been applied. Aside from this she had had no medical treatment. The pulse was 120.

A systolic murmur existed at the apex, propagated for some distance without the apex and indistinctly heard over the body of the heart. A murmur existed at the base over the pulmonary artery, and not over the aorta. There was moderate tenderness over the præcordia.

The *placeboic* remedy was prescribed, with the tincture of aconite over the affected joints, and Dover's power at night.

March 7. On this date there was present a well-marked pericardial friction murmur, with the symptoms of acute pericarditis. This sign and the symptoms of pericarditis were not present on the previous day. The friction murmur had its maximum over the sternum on a level with the nipple; it extended over the præcordia but not without it; it was double and intensified notably by pressure with the stethoscope. A feeble cardiac impulse was felt in the fourth intercostal space between the nipple and sternum. Marked dulness on percussion existed within a line on the left side, extending from the second rib on the median line half an inch without the *linea mammalis* in the left side, and, on the right side, half an inch without the right margin of the sternum. The pulse was 120, of fair volume and strength. The respirations were 66. There was sharp pain in the præcordia on deep inspiration.

Four ounces of whiskey daily were directed, and opium in sufficient doses to procure relief. Oiled muslin was applied over the præcordia.

8/h. The patient was more comfortable. The pulse was 116, soft and feeble; the respirations were 48; she perspired freely; the ankle and knee-joints and the left wrist-joint were painful and tender. The friction murmur was louder than on the previous day; the limits of dulness on percussion were somewhat extended. The treatment was continued.

9th. Pulse was 112; respirations were 35; continued to perspire freely; The dulness in præcordia did not extend over a wider space than on the previous day. Treatment continued.

10th. Pulse 100, with more volume and force; respirations 32; the friction sound less intense. Treatment continued.

11th. The patient reported having suffered much from pain in the præcordia, which was quite tender on pressure. Pulse 104; respirations 36. A dejection to day, and not previously for several days. She perspired freely. The affected joints were tender but not painful. The friction-murmur continued. The mitral systolic bellows murmur was faintly heard. Treatment continued.

12th. The patient complained of præcordial pains. Pulse 120; the friction-murmur continued. No evidence of an increase of the pericardial effusion. A poultice to the præcordia was directed, the opium to be increased and the whiskey continued.

14th. No alteration in this case was noted until on this date, when she became much worse. The pulse became extremely rapid and feeble; she was greatly prostrated, and seemed almost moribund; she complained of severe pain in the chest. This unfavourable change followed suspension of the whiskey, which was done at the patient's desire as preparatory for the rite of communion. The whiskey was resumed and given more freely, six ounces being taken in five consecutive hours. A grain of opium was given hourly. Under this course of treatment she was measurably relieved, and the symptoms were improved.

15th. The examinations of the chest for several preceding days had been limited to the præcordia. On this date, the examination being extended, revealed the signs of pneumonia affecting the lower lobe of the left lung. Marked dulness on percussion, and the bronchial respiration existed over this lobe. The symptoms again, on this date, denoted impending dissolution. The lips were livid and the face had a dusky hue; the pulse was 128; the respirations were 60. Some tracheal rales were heard at a distance. I regarded the prognosis as unfavourable as possible. My directions were simply to sustain the patient vigorously. The details of the treatment were left to the house physician of my division, Dr. W. M. James. The measures pursued from this date until marked improvement took place, were prescribed by him and carried out under his attentive direction. I am also indebted for the subsequent history to the copious notes made daily by Dr. James, or by the senior assistant on the division, Dr. J. C. Stone.

On the afternoon of this date (15) the hypodermic injection of ten drops of Magendie's solution was employed; half an ounce of whiskey was given every twenty minutes, and five grains of the carbonate of ammonia every fifteen minutes. In the evening thirty grains of the chlorate of potassa and a grain of opium were given hourly. At 11½ P. M. the appearance of the surface had improved. The skin was warm and dry; the pulse was 122, with considerable volume and force; the respirations were 60.

16th, 1 A. M. Pulse 120; respirations 60; free perspiration. 2½ A. M. Sleeping; pulse 120; respirations 34. *Since 9 P. M. she had taken half an ounce of whiskey, five grains of the carbonate of ammonia and fifteen grains of the chlorate of potassa every half hour, with occasionally a few drops of Magendie's solution.* From 6 A. M. to 9 A. M. the whiskey and all medicine were suspended. At 9 A. M. the lips were livid, the face was dusky, the pulse 130, and the respirations 55. She was then ordered carbonate of ammoniæ gr. xx; whiskey 3ss; and chlorate of potassa

gr. xv, every half hour. At 11 A. M. the countenance was less dusky, the lividity of the lips was gone, the respirations were 45, and the pulse was 120. At 7 P. M. the pulse was 120, and the respirations were 44. The whiskey was increased to  $\mathfrak{zvi}$  every half hour. At 9 the pulse was 130 and the respirations were 54. The whiskey was increased to  $\mathfrak{3x}$  every half hour. At 12, midnight, the pulse was 120 and the respirations were 42. The skin was moist and the colour of the face normal. The stomach being irritable, the carbonate of ammonia was reduced to gr. x given hourly by enema. The chlorate of potassa gr. xv hourly was continued.

17th. The pulse at different periods of the day varied from 120 to 130; the respirations from 44 to 60. The countenance was natural, and she perspired freely. Several watery dejections occurred, which were checked by an enema of starch and laudanum. Bronchial breathing continued over the lower lobe of the left lung. At 6 P. M. the patient had taken during the preceding twenty-four hours: Whiskey  $\mathfrak{3xxiv}$ ; carbonate of ammonia  $\mathfrak{Div}$ ; chlorate of potassa  $\mathfrak{3ss}$ ; also, strong beef-tea Oj, eggs 4, and milk Oj.

18th. The pulse varied from 120 to 132; the respirations from 40 to 60. The skin was moist. During the twenty-four hours there were given: Whiskey  $\mathfrak{3l}$ ; carbonate of ammonia gr. lxxx; chlorate of potassa  $\mathfrak{3ss}$ , and opium gr. 1 every four hours; also, beef-tea Oj, eggs 4, and milk Oj.

19th. The pulse varied from 120 to 128; the respirations from 54 to 60. The pulse had considerable volume and force. Countenance and skin normal; she vomited several times a greenish liquid containing mucus. During the twenty-four hours there were given: Whiskey  $\mathfrak{3xxxviiij}$ ; also, eggs 4, beef-tea Oj, milk Oj. The ammonia and chlorate of potassa were discontinued at the instance of Dr. Flint.

20th. The pulse varied from 120 to 130; respirations from 40 to 52. Diarrhœa occurred, and was arrested by an enema of starch and laudanum. Vomiting of greenish liquid and mucus also occurred. She drank freely of the effervescing mixture, and took of Magendie's solution ten drops. During the twenty-four hours, there were given: Whiskey  $\mathfrak{3xvj}$ ; also beef-tea Oj, eggs 4, and milk Oj.

21st. The pulse 120; respirations varied from 44 to 56. The whiskey and nourishment the same as on the preceding day.

22d. Pulse 120; respirations 50. General improvement from day to day was manifest. The whiskey and nourishment the same as on the preceding day.

25th. Pulse 120; respirations 42. The whiskey was diminished to  $\mathfrak{3j}$  every three hours. The bicarbonate of soda gr. v every two hours, was prescribed, and Tulley's powder of opium *pro re nata*.

The pericardial friction-murmur was still heard, and the respiration was still bronchial over a part of the lower lobe of the left lung.

27th. Pulse 132; respiration 42. She complained of pain and soreness in several joints. She took whiskey  $\mathfrak{3viiij}$  in the twenty-four hours.

31st. Under this date the following note was made by myself: "This patient has progressively improved. The respiration has become vesicular over the whole of the lower lobe of the left lung. The apex-beat is feebly felt in the fifth intercostal space. The friction-murmur has disappeared. The mitral systolic bellows murmur continues." I did not note the pulse and respirations, but the patient was distinctly convalescent on this date,<sup>1</sup> which terminated my period of service.

<sup>1</sup> May 11. This patient has continued to convalesce, and is now quite well.

*Remarks.*—I have given a condensed account of the history of this case from day to day after the development of pericarditis and pneumonia up to the time when the improvement was fairly under way, with reference to the treatment which was pursued. The treatment was determined by the existence of the affections just named, without regard to the fact that these affections were developed in the course of rheumatism. The whiskey and nourishment were given to support the powers of life, or, in other words, to obviate the tendency to death by asthenia. The chlorate of potassa was given under the idea of introducing by this remedy oxygen into the system, and was directed to the danger from apnœa, and the carbonate of ammonia was given with a view of preventing the coagulation of fibrin in the heart-cavities. These measures were employed by Dr. James at a time when I considered the case as desperate. The quantities given of each were very large. The lividity disappeared in a short time under their use. They were all suspended for several hours on one day for the purpose of observing the condition of the patient without them, and the symptoms became distinctly worse. The ammonia and chlorate of potassa were continued for several days, but at length appeared to occasion vomiting and diarrhœa, and they were in consequence withdrawn. How far the measures employed contributed, severally or collectively, to the favourable issue of the case, I leave, without discussion, for the judgment of the reader. But I cannot close these remarks without expressing my admiration of the zeal and fidelity of Dr. James and his assistant Dr. Stone, who observed and noted the symptoms of the case at intervals of a few hours during night and day, until the period of extreme danger was passed. That the patient would have died without this assiduity cannot of course be proven; but I think the reader will agree with me in thinking it highly probable that her life was saved by their exertions. Whether the success would have been secured by the alcoholic stimulus and nutriment without the ammonia and chlorate of potassa, is a question which I do not feel prepared to answer, but I cannot avoid the conjecture that the latter might have been dispensed with.

I have entitled this paper "A Contribution toward the Natural History of Rheumatism." I have not intended, by reporting these thirteen cases, to furnish data for determining the symptomatology of the disease. The cases are not only too few for this, but they were not recorded with sufficient completeness as regards the symptoms, and, in reporting them, I have condensed the records within narrow limits. My object is to analyze the cases with reference only to the following points pertaining to the natural history: The duration of the disease, and of convalescence; the number of joints affected, and the occurrence of affections of the heart or other complications. I shall proceed to consider the facts under these three heads. It will be observed that, of the thirteen cases in all but two the disease was acute; that is, the local phenomena denoted more than a slight

arthritic inflammation, and the febrile movement was more or less marked. In two cases the disease was sub-acute.

*Duration of the Disease and of Convalescence.*—The duration of the disease from the date of the attack to convalescence (excluding the case complicated with pericarditis and pneumonia), varied between twelve and fifty-six days. The duration was under fifteen days in three cases; over fifteen and under twenty days in one case; over twenty and not over twenty-five days in three cases; over twenty-five and not over thirty days in three cases; and in the remaining two cases, the duration was in one case forty-five, and in the other case fifty-six days. The mean duration was a small fraction under twenty-six days.

The duration from convalescence to the date of discharge, or complete recovery, varied from five to twenty-seven days. The mean duration was a fraction over sixteen days.

The time in hospital varied from twelve to fifty days, the mean being a fraction over thirty days.

These results go to show considerable diversity as regards the intrinsic tendency of this disease to end after a certain period. They show, however, that the disease does end from self-limitation after a duration varying in different cases. They go to show, also, that the mean duration, without curative treatment, cannot greatly exceed the average length of the disease when active measures are employed with a view of controlling it. These conclusions are admissible as deductions from the analysis of the small number of cases reported in this article; but, of course, a much larger collection of cases is desirable in order to determine fully the laws of the disease with respect to duration. As remarked by Valleix, this is one of the most important of the points belonging to the clinical study of this disease; for, since the disease is generally unattended by any immediate danger to life, the chief object of treatment, aside from the prevention of grave complications, is to abridge its duration. And as a standard for determining, by comparison, whether measures employed to cure the disease do exert a curative effect, its natural history, as regards the laws of its self-limitation, must be ascertained.

In my former report I gave the results of an analysis of seventeen cases, with reference to the duration from the date of attack to convalescence. The average duration in these cases was less than that of the cases in the present collection, being a fraction over seventeen days. Of the seventeen cases, in four convalescence occurred under twelve days. These cases were treated actively by different measures. It is fair to suspect that in some of these cases the disease was abridged; but it may, with equal fairness, be suspected that in a certain proportion, and perhaps the larger proportion of cases, whatever be the treatment pursued, this disease obeys its own laws as respects continuance.

*The Number of Joints affected.*—The following is a recapitulation of the joints affected in each of the cases :—

Case 1. Both wrists, one ankle, and one elbow.

“ 2. Both hips, one wrist, one knee, and both shoulders.

“ 3. One knee, one elbow, and phalango-metacarpal joint of thumb.

“ 4. Both knees, both ankles, and one wrist.

“ 5. One wrist and one knee.

“ 6. One wrist and one knee.

“ 7. One knee and one ankle.

“ 8. Both shoulders, both ankles, both elbows, the finger joints of one hand, and the sterno-clavicular articulation on one side.

Case 9. One knee only.

“ 10. Both knees, both ankles, one elbow, one wrist, and the small joints of fingers and toes.

Case 11. Both knees, one shoulder, and one ankle.

“ 12. Both ankles.

“ 13. Both knees, both ankles, both shoulders, both wrists, and one hip.

The important topics of inquiry under this head are, *first*, Are a greater number of joints affected; and, *second*, Is the affection of the joints of greater intensity, when only palliative measures are employed, than when the disease is treated by measures supposed to be curative?

With respect to the first of these topics, an examination of the foregoing recapitulation will, I think, satisfy the reader who has had much practical acquaintance with articular rheumatism, that these cases will compare favourably with cases as they ordinarily occur in practice when treated by the different methods which have been in vogue. As regards the second topic, I can only give the impression left upon my mind after the observation of these cases; and my impression is, that the average intensity of the affection was not greater than a practical acquaintance with the disease would lead us to expect in the same number of cases treated with active remedies.

*Affections of the Heart and other Complications.*—I come now to the most important of the subjects belonging to the clinical study of articular rheumatism. This disease involves immediate danger to life only when pericarditis or some other grave complication becomes developed. The occurrence of endocarditis, which modern researches have shown to be a frequent complication, although it does not place life in immediate jeopardy, renders the patient liable, at a period more or less remote, to serious organic lesions of the heart. Clinical observation shows that, of persons affected with valvular lesions a very large proportion have been affected with articular rheumatism. Hence the complications of this disease, and especially those of the heart, are the events to be most dreaded. So far as regards treatment, measures on which reliance might be placed to prevent the occurrence of pericarditis and endocarditis are much more to be desired

than measures to abridge the duration of the disease, to limit the number of joints affected, to diminish the intensity of the arthritic inflammation, or to relieve the sufferings of the patient. With a full appreciation, then, of the importance of this point of inquiry, I proceed to review the cases which I have reported, with reference to cardiac complications.

An endocardial or bellows murmur existed in eleven of the thirteen cases. Was endocarditis developed in this large proportion of cases? I do not hesitate to answer this question negatively. The murmur was limited to the base of the heart in all but three cases; it was limited to the site of the pulmonary artery in two cases. I have for some time ceased to regard a murmur over the aorta or pulmonary artery as evidence of endocarditis in rheumatism. I suspect such a murmur will be found in the majority of cases, especially in females, if a careful examination be made with Cammann's stethoscope. It is to be remarked that, of the thirteen cases, all but two were females. I have also been led to doubt whether a murmur at the apex and over the body of the heart, developed in the course of rheumatism, is to be regarded as, in itself, sufficient evidence of endocarditis.<sup>1</sup> A murmur in these situations may be developed and disappear during convalescence; this was observed in one of the three cases in which a murmur existed at the apex. There is reason to believe that murmurs here, as well as at the base, may be of hæmic origin. To be evidence of endocarditis, a murmur must be mitral, developed under observation, persisting, and having a certain degree of intensity, and it should be associated with some symptoms denoting a cardiac affection; viz., pain or uneasiness in the præcordia, tenderness, and greater disturbance of the heart's action than is consistent with the febrile movement belonging to the rheumatic affection. With these views I did not consider that there were adequate grounds for the diagnosis of endocarditis, save in one case, in which pericarditis also existed (Case 13). Of the correctness of this judgment the reader will, of course, form his own opinion. It is an open question, and one difficult to settle, as to the source and significance of a mitral or intra-ventricular murmur in cases of rheumatism. I have given briefly the views which I have been led to entertain, and which are strengthened in my mind by their coincidence with the views lately enunciated by Dr. Fuller. In leaving this point, I would state that I am accustomed to use habitually Cammann's stethoscope, and that murmurs are discovered by means of this instrument which elude detection when the ear is applied directly to the chest or the wooden cylinder is used. The large proportion of cases in which a murmur at the base was noted is perhaps to be thus explained.

Pericarditis was developed in one of the cases. And in this case pneu-

<sup>1</sup> Dr. Fuller's remarks on this point, in the lecture republished in the *Med. News and Library*, number for March, 1863, seem to me to be sound, and I would commend them to the reader's attention.

monia occurred shortly after the development of pericarditis. This case was the last one under observation. Had it been at an earlier period I might have been deterred by it from continuing the plan which I had adopted; but up to the occurrence of this case, all the cases had pursued a favourable course, without any important complication. Endocarditis was supposed to exist when this patient was admitted. The diagnosis of this complication was based on a pretty loud mitral systolic murmur, propagated without the apex. It was also heard on the back. And with this were associated tenderness over the præcordia, and an excited action of the heart greater than would be expected from the rheumatic affection alone. The pericarditis was developed on the second day after her admission, and the pneumonia a few days subsequently. The endocarditis already existing, and the pericarditis being developed so quickly after admission, I am relieved of responsibility as regards the adoption of therapeutical measures which it may be supposed might have prevented these complications. The question, therefore, is, would these complications have been prevented had the patient entered the hospital sooner, and active treatment been at once employed? This question I shall not presume to answer. The case illustrates the well known fact in the natural history of articular rheumatism, viz., that endocarditis, pericarditis and pneumonia are developed in a certain proportion of cases. The gist of the question is, whether the introduction of alkaline remedies, or any other method of treatment, will render the patient secure against, or less liable to, these complications. I certainly have no desire to come to the conclusion that these complications are not preventable; but it is certain that the different methods of treatment heretofore in vogue have failed to prevent their occurrence. Dr. Fuller, in the lectures already referred to (which have fallen under my notice since the greater part of the cases now reported were observed), claims that the prompt and efficient employment of the alkaline treatment will afford a complete protection against the cardiac affections. He administers about two drachms of some alkaline carbonate, or its salts, every three or four hours, inducing alkalinity of the urine generally within twenty-four hours. When this result is brought about he considers the patient safe as regards endocarditis and pericarditis. He affirms that these affections have not occurred in any case under his observation when the opportunity for pursuing this treatment has offered. I have not been accustomed to give alkaline remedies to such an extent, and, so far as I know, it is not the custom with the practitioners in this country who have adopted the alkaline treatment. Should clinical experience establish the efficacy of the method pursued by Dr. Fuller, it will assuredly deserve to rank among the most important of modern discoveries in practical medicine.